

## **REMARKS**

Initially, in the Office Action dated March 13, 2001, the Examiner has rejected claims 1-12, 14, and 16-20 under 35 USC §103(a) as being unpatentable over U.S. Patent 4,648,036 (Gallant) in view of U.S. Patent 5,623,639 (Yazaki et al.).

By the present response Applicants have amended claims 1, 4, 7, 12, 14, 19 and 20. Moreover, Applicants have submitted new claims 21 and 22 for consideration by the Examiner. Claims 1-12, 14, and 16-22 remain pending in the present application.

Claims 1-12, 14 and 16-20 have been rejected under 35 USC §103(a) as being unpatentable over Gallant in view of Yazaki et al. Applicants respectfully traverse these rejections.

Referring to Figs. 2-4 of Applicants' application, each data segment has a data area, a bookmark information area having time at which the data is loaded in the data segment, and a status area indicating a loading state. As recited in claim 21 of the present application, a database managing method according to the present invention includes: pointing a segment of a database which stores a data most oldest in time series based on a retrieval request requesting data of time series between a first time and a second time; acquiring time information from a bookmark residing at a predetermined position of the segment to obtain status information to determine whether the status information indicates a state of loading of data in the database; seeking succeeding segments to find segments of time series after the first time based on bookmarks of the succeeding segments until a segment of time series at an end time series before the second time among the segments having status of loading; and reading data from the segments found in the seeking step.

Therefore, as described in Applicants' specification page 12, line 6 through page 14, line 20, time series data can be quickly retrieved by use of the claimed elements of the present application.

Regarding claims 1, 4, 7, 12 and 20, Applicants submit that neither Gallant nor Yazaki et al. disclose, suggest or render obvious the limitations in the combination of each of these claims of, inter alia, bookmark information areas having bookmark information indicative of a time at which data is loaded. Gallant teaches a method for performing update transactions in a database having three statuses of: non-update, update, and post update. These parameters do not relate at all to bookmark information indicative of a time at which data is loaded as recited in the claims of the present application. Yazaki et al. teaches a database having time series data, however, Yazaki et al. relates to the management of a memory unit based on signals received from a time measuring unit that includes a time managing table. This does not suggest or render obvious bookmark information indicative of a time at which data is loaded as recited in the claims of the present application. According to the present invention, when data is loaded, a time at which the data is loaded is stored as a bookmark at a predetermined location. Thanks to the bookmark, when retrieval of time designation or time interval designation is carried out, the retrieval range can be narrowed physically by utilizing the bookmark.

Moreover, in contrast to the Examiner's assertions, a plurality of data areas being loaded data generated in time series during certain time as recited in the claims of the present application is not related to a plurality of tables or data that is changeable. Further, as stated previously, bookmark information according to the

present invention includes a time at which data is loaded, and is not merely a code field and key field used to identify the state of the data as asserted by the Examiner.

Regarding claims 21 and 22, Applicants submit that neither Gallant nor Yazaki et al., disclose, suggest or render obvious the limitations in the combination of each of these claims of, inter alia, pointing to a segment of a database which stores a data most oldest in time series based on a retrieval request, acquiring time information from a bookmark residing at a predetermined position, seeking succeeding segments to find segments of time series after a first time based on bookmarks of succeeding segments, or reading data from the segments filed in the seeking process. As mentioned previously, Gallant relates to a method of performing update transactions in a database system which uses parameters of non-update, update and post update. Yazaki et al. relates to a time management for a memory. Neither of these references taken alone or in any proper combination disclose the limitations recited in the combination of each of claims 21 and 22 of the present application.

Regarding claims 2, 3, 5, 6, 8-11 and 16-19, Applicants submit that these claims are dependent on one of independent claims 1, 4, 7, 12, 14 and 20 and, therefore, are patentable at least for the same reasons noted previously regarding these independent claims.

Accordingly, Applicants submit that neither Gallant nor Yazaki et al., taken alone or in any proper combination, disclose, suggest or render obvious the limitations in the combination of each of the claims of the present application. Applicants respectfully request that these rejections be withdrawn and that claims 1-12, 14 and 16-22 be allowed.

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1-12, 14 and 16-22 are now in condition for allowance.

Accordingly, early allowance of such claims is respectfully requested.

Any amendment to the claims which have been made in this Amendment and which have not been specifically noted to overcome a rejection based upon the prior art should be considered to have been made for purposes unrelated to patentability and no estoppel should be deemed to attach thereto.

Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attached page is captioned "**Version with markings to show changes made.**"

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees or credit any overpayment of fees to the deposit account of Antonelli, Terry, Stout & Kraus, LLP., Deposit Account No. 01-2135 (referencing case No. 500.36133CX1).

Respectfully submitted,



Frederick D. Bailey  
Registration No. 42,282  
ANTONELLI, TERRY, STOUT & KRAUS, LLP

FDB/pay  
(703) 312-6600

**Version with markings to show changes made**

Please amend the claims as follows:

1. (Four Times Amended) A data structure, stored on a storage medium, in a database, comprising:

a plurality of data areas, each of said plurality of data areas being loaded with data generated in time series during a certain time, the plurality of data areas being managed by the time series; and

bookmark information areas respectively provided at predetermined locations in said plurality of data areas, each having a pair of bookmark information indicative of a time at which said data is loaded in [corresponding to] a time series data piece [loaded] in each of said data areas and state transition information indicative of a state of the data piece in said each data area, said state transition information being allowed to have one of a value indicative of an online state in which the data area is permitted to be retrieved and a value indicative of a loading state in which loading of data in the data area has not yet been completed and the data area is not permitted to be retrieved.

4. (Four Times Amended) A data structure, stored on a storage medium, in a database, comprising:

a plurality of data areas in which given time series data pieces are loaded at predetermined locations, respectively, in said database, each of said plurality of data areas being loaded with data generated in time series during a certain time, the plurality of data areas being managed by the time series; and

predetermined bookmark information areas each having a pair of bookmark information indicative of a time at which said data is loaded in [corresponding to] a time series data piece [loaded] in each of said data areas and state transition information indicative of a state of the data piece in each data area, said state transition information having one of a value indicative of an online state in which the data area is permitted to be retrieved and a value indicative of a loading state in which loading of data in each data area has not yet been completed and the data area is not permitted to be retrieved.

7. (Four Times Amended) A database managing method for managing data in a database, comprising:

adding, to a predetermined location in a given time series data piece for a predetermined time, bookmark information having bookmark information indicative of a time at which said data is loaded in a [corresponding to said] time series data piece for said predetermined time and state transition information indicative of a state of said time series data piece for said predetermined time;

providing, as said state transition information, one of a value indicative of an online state in which the data area is permitted to be retrieved, a value indicative of a loading state in which loading of data in the data area has not yet been completed and the data area is not permitted to be retrieved and a value indicative of a state in which data in the data area is empty; and

loading time series data pieces for predetermined times in a plurality of data areas in said database, each of said plurality of data areas being loaded with data

generated in time series during a certain time, the plurality of data areas being managed by the time series.

12. (Four Times Amended) A database managing method for managing data in a database, comprising:

adding, to a predetermined location in a given time series data piece for a predetermined time, bookmark information having bookmark information indicative of a time at which data is loaded in a [corresponding to said] time series data piece for said predetermined time and state transition information indicative of a state of said time series data piece for said predetermined time and start area information having a flag indicating whether the area is the final one of a plurality of areas in said database and an address area for setting an address;

providing, as said state transition information, one of a value indicative of an online state in which the data area is permitted to be retrieved and a value indicative of a loading state in which loading of data in the data area has not yet been completed and the data area is not permitted to be retrieved;

loading time series data pieces for predetermined times in a plurality of consecutive data areas in said database, each of said plurality of consecutive data areas being loaded with data generated in time series during a certain time, the plurality of consecutive data areas being managed by the time series; and

raising said flag of start area information in the final one of said plurality of consecutive data areas and setting an address of first one of said plurality of consecutive data areas in said address area.

14. (Four Times Amended) A database managing method for managing data in a database, comprising:

reading bookmark information having bookmark information indicative of a time at which data is loaded in a [corresponding to a given] time series data piece for a predetermined time and state transition information indicative of a state of said time series data piece for said predetermined time from a predetermined bookmark area and setting the state of said time series data piece in said state transition information to a value indicative of a state in which data is empty so as to write said bookmark information in said database; and

loading given time series data pieces for given predetermined times in a plurality of data areas in said database, each of said plurality of data areas being loaded with data generated in time series during a certain time, the plurality of data areas being managed by the time series; and

writing bookmark information having bookmark information indicative of a time corresponding to a time series data piece for said predetermined time and state transition information indicative of an online state of said time series data piece for said predetermined time in said predetermined bookmark area.

19. (Four Times Amended) A database managing method according to claim 14, further comprising:

cumulating repeatedly applied time series data pieces in a cumulative storage area until the cumulative data reach total data for said predetermined time; and



adding, to a data piece in said cumulative data storage area, bookmark information having bookmark information indicative of a time at which said data is loaded in [corresponding to] said data piece for said predetermined time and state transition information indicative of a state of said time series data piece for said predetermined time and loading resulting data pieces in said plurality of data areas in said database, each of said plurality of data areas being loaded with data generated in time series during a certain time, the plurality of data areas being managed by the time series.

20. (Three Times Amended) A database managing system, comprising:

a processor having a memory for storing data for a certain time and a clock for reading times at which said data are applied, the memory being managed by time series; and

a database connected to said processor and having bookmark information indicative of a time at which said data is loaded in [corresponding to] a time series data piece for a predetermined time, state transition information indicative of a state of said time series data piece of said predetermined time and said time series data pieces for said predetermined times, said state transition information having one of a value indicative of an online state in which the data area is permitted to be retrieved, a value indicative of a loading state in which loading of data in the data area has not yet been completed and the data area is not permitted to be retrieved and a value indicative of a state in which data in the data area is empty.